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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,963	07/23/2001	James B. Terry	1391-10210	7967

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EXAMINER

LEE, JONG SUK

ART UNIT	PAPER NUMBER
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3673

DATE MAILED: 12/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/911,963

Applicant(s)

TERRY ET AL.

Examiner

Jong-Suk (James) Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3, 10-13, 15, 17-25, 33-35, 38-62 and 64-74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33-35 and 38-47 is/are allowed.
- 6) ☒ Claim(s) 1-3, 10-13, 15, 17-25, 48-62, 68-70 and 72-74 is/are rejected.
- 7) ☒ Claim(s) 64-67 and 71 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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**DETAILED ACTION**

1. The amendment filed August 26, 2002 has been entered.
2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on August 26, 2002 have been approved.

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***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16 This application currently names joint inventors. In considering patentability of the claims  
17 under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was  
18 commonly owned at the time any inventions covered therein were made absent any evidence to  
19 the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor  
20 and invention dates of each claim that was not commonly owned at the time a later invention was  
21 made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35  
22 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

- 23  
24 4. Claims 1, 2, 10, 12, 13, 15, 17-19, 21, 23-25, 48-52, 57, 61 and 62 are rejected under 35  
25 U.S.C. 103(a) as being unpatentable over Horstmeyer et al. (US 4,463,814) in view of Thomeer

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1 et al.'003 (US 5,828,003).

2 Horstmeyer et al. disclose a down-hole drilling apparatus comprising: a composite tube  
3 (14) which is a tube/string of tubular members having a portion (32) made of non-metal/plastic,  
4 data transmission conductor/control wires (24), instrumentation wires (26), power cables (28) and  
5 abrasion-proof coverings (34); a drill bit/ a member of displacing formation (36); a power  
6 section/electric motor (60); a bottom hole assembly (21) attached downhole to the string  
7 including a well apparatus and a propulsion system/thrusters, pistons and housings (39, 52; 104;  
8 106, 130); The direction of drilling can be altered by the operation of thruster assemblies (39, 52)  
9 serving as a three dimensional steering apparatus (see Figs. 1-14; col.3, lines 51-68; col.4, lines 1-  
10 68; col.5, lines 1-15; col.7, lines 2-14; col.8, lines 7-56; col.11, lines 24-33).

11 However, Horstmeyer et al. fails to disclose or fairly suggest the fibers wrapped in a  
12 predetermined pattern around the liner of the composite tube. Thomeer et al.'003 discloses a  
13 composite coiled tubing comprising of a liner (76, 91, 99) with a flowbore and layers of fibers  
14 (77-79, 92-95, 101-109) wrapped in a predetermined braided pattern around the liner (76, 91,  
15 99), a number of power conductors (105, 107) as depicted in Fig. 6e and/or a conductor or fiber  
16 may be intrinsically manufactured in the composite coiled tubing (see col.11, lines 12-34 and  
17 col.12, lines 43-58) and the layers of fibers may carry axial/tensile loads to the composite tubing;  
18 wherein a downhole assembly/tool (20) being connected to the composite tubing (see Figs. 1-29;  
19 col.6, lines 4-33; col.7, lines 12-67).

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1           Therefore, it would have been obvious to one of ordinary skill in the art at the time the  
2 invention was made to replace Horstmeyer et al.'s composite tube with the composite tubing as  
3 taught by Thomeer et al.'003 in order to enhance the axial/tensile resistance for the composite  
4 tubing.

5  
6           5.       Claims 17, 19, 20, 55, 56, 68-70 and 72-74 are rejected under 35 U.S.C. 103(a) as being  
7 unpatentable over Pringle et al.'951 (US 5,394,951) in view of Thomeer et al.'003. The teachings  
8 of Thomeer et al.'003 have been discussed above.

9           Pringle et al.'951 disclose a bottom hole drilling assembly connectable to coiled tubing  
10 comprising: a string (20) of composite pipe attached at one end to the bottom hole drilling  
11 assembly and having a communication link extending through a wall of the pipe; a downhole  
12 motor (30); and a propulsion system attached to the downhole to the drill string further  
13 comprising of a drill bit (26), a drill stem attached to a drill bit at one end for drilling the bore hole  
14 and attached to an orientation assembly (48), a thruster/prime mover (40) coupled to the pipe  
15 string; an articulated joints/sub (32) articulable three dimensionally and having a first portion  
16 (32B) and a second portion (32A) in a manner to permit the second portion to be bent from a  
17 coaxial orientation from the first portion (32B), a steerable assembly (34, 36) in engagement with  
18 the second portion (32A) and the steerable assembly being in communication with the  
19 communication lint to bend the articulated joints as to the command of direction change and an

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1 orientation assembly sending signals through the data transmission conduit/communication link  
2 (20) to control (56, 58) and the steerable assembly, prime mover receiving signals from the  
3 control to move the drill bit within the borehole in response to the signals, the propulsion system  
4 being powered by the circulation fluids circulated through the flow bore and up an annulus formed  
5 by the composite tubes and inherently the composite tubes being engineered to withstand axial  
6 and yield stress placed on the string (see Fig. 1; col.2, lines 53-68; col. 3, lines 1-59; col.5, lines  
7 10-43).

8           However, Pringle et al.'951 fails to disclose or fairly suggest the fibers wrapped in a  
9 predetermined pattern around the liner of the composite tube. Thomeer et al.'003 discloses a  
10 composite coiled tubing comprising of a liner (76, 91, 99) with a flowbore and layers of fibers  
11 (77-79, 92-95, 101-109) wrapped in a predetermined braided pattern around the liner (76, 91,  
12 99), a number of power conductors (105, 107) as depicted in Fig. 6e and/or a conductor or fiber  
13 may be intrinsically manufactured in the composite coiled tubing (see col.11, lines 12-34 and  
14 col.12, lines 43-58) and the layers of fibers may carry axial/tensile loads to the composite tubing;  
15 wherein a downhole assembly/tool (20) being connected to the composite tubing as discussed in  
16 Paragraph No. 4.

17           Therefore, it would have been obvious to one of ordinary skill in the art at the time the  
18 invention was made to replace Pringle et al.'951's composite tube with the composite tubing as  
19 taught by Thomeer et al.'003 in order to enhance the axial/tensile resistance for the composite

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1 tubing.

2 With respect to the range of the modulus of elasticity, yield strain, yield stress of the  
3 composite tubing and the pulling force on the string by means of the propulsion system, an artisan  
4 within the ordinary skill in the art would have provided such a range as claimed in order to  
5 enhance the directional drilling capability and control.

6  
7 6. Claims 3, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over  
8 Horstmeyer et al. as modified by Thomeer et al.'003, as applied to claim 1, further in view of  
9 Williams et al. (US 5,913,337). The teachings of Horstmeyer et al. modified by Thomeer et  
10 al.'003 have been discussed above.

11 However, the teachings of Horstmeyer et al. modified by Thomeer et al.'003 fail to  
12 disclose the range of Young's modulus and density of the composite umbilical and a metallic  
13 conductor embedded in a wall of the composite umbilical. Williams et al.'337 disclose a spoolable  
14 composite tubular member with energy conductors comprising of a composite umbilical including  
15 non-metallic/fibers having a modulus of elasticity which is 100,000 psi or greater, and including  
16 the metallic conductor (21) embedded in the wall of the composite umbilical (see Fig.11; col.3,  
17 lines 4-10; col.4, lines 25-34; col.12, lines 46-60).

18 Therefore, it would have been obvious to one of ordinary skill in the art at the time the  
19 invention was made to further modify the composite tube of Horstmeyer et al., as modified by

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1 Thomeer et al.'003, by replacing with the composite umbilical tube having a metallic conductor  
2 and a desired modulus of elasticity as taught by Williams et al.'337 in order to enhance stiffness of  
3 the composite umbilical by providing a uni-directional longitudinal stiffening material in the  
4 opposite sidewalls of the composite umbilical and still provide a desired elasticity limit.

5 With respect to the density parameters for the composite umbilical, it would have been  
6 obvious to one of ordinary skill in the art at the time the invention was made to have provided  
7 Horstmeyer et al.'s tube modified by Thomeer et al.'003 with a certain density in order to provide  
8 a tube that is light and easy to handle in spooling the composite umbilical.

9  
10 7. Claims 22, 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over  
11 Horstmeyer et al. as modified by Thomeer et al.'003, as applied to claim 21, further in view of  
12 Colin et al.'145. The teachings of Horstmeyer et al. modified by Thomeer et al.'003 have been  
13 discussed above.

14 However, the teachings of Horstmeyer et al. modified by Thomeer et al.'003 fail to  
15 disclose a connector for connecting lengths of the pipe. Colin et al.'145 disclose a connection  
16 device for a cable incorporating optical fibers and metal conductors including the connector  
17 assembly as depicted in Fig. 1 (see Figs.1-3; col.2, lines 1-35).

18 Therefore, in view of Colin et al.'145, it would have been obvious to one of ordinary skill  
19 in the art at the time the invention was made to further modify the composite tube of Horstmeyer



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1 et al., as modified by Thomeer et al.'003 by adding the connector device between the end of the  
2 composite umbilical in order to efficiently provide the required length of the umbilical composite  
3 at the site.  
4

5 8. Claims 53 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over  
6 Horstmeyer et al. as modified by Thomeer et al.'003, as applied to claim 17 and 21 respectively,  
7 further in view of Wu (US 5,438,267). The teachings of Horstmeyer et al. modified by Thomeer  
8 et al.'003 have been discussed above.

9 However, the teachings of Horstmeyer et al. modified by Thomeer et al.'003 fails to  
10 disclose a resistivity antenna being connected to the electronic section of the bottom hole  
11 assembly. Wu discloses a bottom hole assembly including a processor/electronic section (51)  
12 having an resistivity antenna as receivers (22, 26) to measure the resistivity of the well (see Fig. 1;  
13 col. 5, lines 21-68; col.6, lines 1-20; col.8, lines 1-19).

14 Therefore, in view of Wu, it would have been obvious to one of ordinary skill in the art at  
15 the time the invention was made to further modify the bottom hole assembly of Horstmeyer et al.,  
16 as modified by Thomeer et al.'003 by adding the receiver and processor to the system in order to  
17 enhance the control of the bottom hole assembly.  
18

19 9. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pringle et al.'951

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1 as modified by Thomeer et al.'003, as applied to claim 17, and further in view of Dismukes (US  
2 4,646,856). The teachings of Pringle et al.'951 modified by Thomeer et al.'003 have been  
3 discussed above.

4 However, The teachings of Pringle et al.'951 modified by Thomeer et al.'003 fails to  
5 disclose or fairly suggest the string of tubular members engineered to cause the string to achieve  
6 neutral buoyancy in the fluids of the well and the specific density of the umbilical composites.  
7 Dismukes discloses tubulars for directional drilling comprising of drill string/conduit, the conduit  
8 including the cylinder designed to provide flotation to the conduit to cause it to be neutrally  
9 buoyant in drilling fluid of the well (see Figs. 7-10; col.5, lines 30-56).

10 Therefore, in view of Dismuke, it would have been obvious to one of ordinary skill in the  
11 art at the time the invention was made to further modify the composite tube of the Pringle et  
12 al.'951, as modified by Thomeer et al.'003, by including the cylinder in order to provide  
13 substantial neutral buoyancy to the umbilical in the drilling fluids.

14  
15 ***Response to Arguments***

16 10. Applicant's arguments with respect to claims 1, 17 and 21 (independent claims) have been  
17 considered but are moot in view of the new ground(s) of rejection.

18 11. The arguments with respect to claims 33-35 and 38 (independent claims) are persuasive  
19 and therefore, art rejection over claims 33-35 and 38-47 have been withdrawn.

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*Allowable Subject Matter*

12. Claims 33-35 and 38-47 would be allowable over the prior art of record.

13. Claims 64-67 and 71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jong-Suk (James) Lee whose telephone number is (703) 308-6777. The examiner can normally be reached between the hours of 6:30AM to 3:00PM Monday thru Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather C. Shackelford, can be reached on (703) 308-2978. The fax phone number for this Group is (703) 305-3597.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168.

J. Lee /jjl  
December 6, 2002



**Jong-Suk (James) Lee**  
**Patent Examiner**  
**Art Unit 3673**